

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D	04 AUG 2005
WIPO	PCT

Applicant's or agent's file reference TS 6426 PCT	FOR FURTHER ACTION	
See Form PCT/PEA/416		
International application No. PCT/EP2004/051407	International filing date (day/month/year) 08.07.2004	Priority date (day/month/year) 09.07.2003
International Patent Classification (IPC) or national classification and IPC E21B7/18, B65G54/02, B03C1/12, E21B21/00		
Applicant SHELL INTERNATIONAL RESEARCH MAATSCHAPPIJ BV et al		

<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> (<i>sent to the applicant and to the International Bureau</i>) a total of 1 sheets, as follows:</p> <ul style="list-style-type: none"> <input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions). <input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box. <p>b. <input type="checkbox"/> (<i>sent to the International Bureau only</i>) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>
<p>4. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Box No. I Basis of the opinion <input type="checkbox"/> Box No. II Priority <input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability <input type="checkbox"/> Box No. IV Lack of unity of invention <input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement <input type="checkbox"/> Box No. VI Certain documents cited <input checked="" type="checkbox"/> Box No. VII Certain defects in the international application <input type="checkbox"/> Box No. VIII Certain observations on the international application

Date of submission of the demand 03.05.2005	Date of completion of this report 03.08.2005
Name and mailing address of the International preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Bellingacci, F Telephone No. +49 89 2399-2784
	

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/EP2004/051407

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
 - This report is based on translations from the original language into the following language, which is the language of a translation furnished for the purposes of:
 - international search (under Rules 12.3 and 23.1(b))
 - publication of the international application (under Rule 12.4)
 - international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

Description, Pages

1-24 as originally filed

Claims, Numbers

3-15 as originally filed
1, 2 received on 18.05.2005 with letter of 18.05.2005

Drawings, Sheets

1/8-8/8 as originally filed

- a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

- The amendments have resulted in the cancellation of:
 - the description, pages
 - the claims, Nos.
 - the drawings, sheets/figs
 - the sequence listing (*specify*):
 - any table(s) related to sequence listing (*specify*):

- This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- the description, pages
- the claims, Nos.
- the drawings, sheets/figs
- the sequence listing (*specify*):
- any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/EP2004/051407

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	2-7,9-15
	No: Claims	1,8
Inventive step (IS)	Yes: Claims	
	No: Claims	1-15
Industrial applicability (IA)	Yes: Claims	1-15
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

**INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(SEPARATE SHEET)**

International application No.

PCT/EP2004/051407

Reference is made to the following documents:

D1 = DE 2 052 516 A

D2 = WO 02/34653 A

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

V-1 D1, which is considered as the closest prior art, discloses:

a device for transporting particles containing a magnetic material in a selected direction (page 1, first paragraph), the device comprising:

- a support member having a support surface (1, fig. 1) for supporting the particles, the support surface extending in the selected direction;

- a separator [*it separates the magnetic particles from the emulsion*] magnet (3) arranged to generate a magnetic field for retaining the particles on the support surface whereby the magnetic field on the support surface is arranged to have a high-field band, a low-field band, and a magnetic field gradient in a gradient zone between said high- and low-field bands whereby the magnetic field strength in the high-field band is higher than that in the low-field band (page. 4, lines 16-18 and fig. 1);

- means for advancing the high- and low-field bands relative to the support surface in a direction having a component in the direction of the magnetic field gradient on the support surface, whereby the high-field band is followed by the low-field band (page 4, lines 1-8);

- whereby along said high-field band at least a first magnetic pole and a second magnetic pole of opposite polarity are arranged such that a first magnetic path on the support surface from the first magnetic pole to the second magnetic pole is shorter than a second magnetic path on the support surface crossing the gradient zone from the first magnetic pole to any other nearest magnetic pole of opposite polarity (page 5, lines 14-21).

The subject-matter of claim 1 is therefore not new and the claim does not meet the corresponding requirement of Art. 33(2) PCT.

In drawing the above conclusion it has been observed in particular that fig. 1 and 3 in

**INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(SEPARATE SHEET)**

International application No.

PCT/EP2004/051407

combination clearly disclose that the distance between two poles of opposite polarity (i.e. between any two adjacent poles identified with reference sign 3 and visible in fig. 1) is shorter than the distance between two poles of opposite polarity in a direction crossing the gradient zone (i.e. any pole identified with reference sign 3 and the opposite pole of the same magnet, i.e. pole "N" at the top of fig. 3 and pole "S" at the bottom of the same figure).

V-2 The subject-matter of claim 2 is new as D1 does not specify whether the magnets comprise pluralities of building blocks, and claim 1 meets therefore the novelty requirement of Art. 33(2) PCT. The use of stacked building blocks of magnetic materials in magnetic particles transporting means is however well known, see for example D2, page 4, lines 26-29, and therefore it would obvious to modify accordingly the transport means according to D1. Claim 2 does not meet the inventive step requirement of Art. 33(3) PCT.

V-3 The subject-matter of claims 3-7 (whereby claim 7 should have been formulated as dependant "on any of claims 2 to 6, as it refers to a "stacking direction") and 9 to 15 is suggested by the cited documents (see search report), and therefore said claims do no meet the inventive step requirement of Art. 33(3) PCT.

V-4 The subject-matter of claim 8 is known from D1, see page 4, lines 16-19, and therefore the claim does not meet the novelty requirement of Art. 33(2) PCT.

Re Item VII

Certain defects in the international application

VII-1 a) The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).
b) Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in D1 is not mentioned in the description, nor is said document identified therein.

C L A I M S

1. A device for transporting particles containing a magnetic material in a selected direction, the device comprising:

- a support member having a support surface for supporting the particles, the support surface extending in the selected direction;
- a separator magnet arranged to generate a magnetic field for retaining the particles on the support surface whereby the magnetic field on the support surface is arranged to have a high-field band, a low-field band, and a magnetic field gradient in a gradient zone between said high- and low-field bands whereby the magnetic field strength in the high-field band is higher than that in the low-field band;
- means for advancing the high- and low-field bands relative to the support surface in a direction having a component in the direction of the magnetic field gradient on the support surface, whereby the high-field band is followed by the low-field band; characterized in that along said high-field band at least a first magnetic pole and a second magnetic pole of opposite polarity are arranged such that a first magnetic path on the support surface from the first magnetic pole to the second magnetic pole is shorter than a second magnetic path on the support surface crossing the gradient zone from the first magnetic pole to any other nearest magnetic pole of opposite polarity.

2. The device of claim 1, wherein the separator magnet is a composite magnet comprising a plurality of magnetic building blocks stacked together in a selected stacking direction.